

vey. A successful application of the approach requires high rates of participation for pharmacies, physicians, and patients. A survey of epilepsy would best be restricted to noninstitutionalized populations. Even at that, the resulting estimates would exclude those who had never been treated for their epilepsy. The estimates would also exclude persons with epilepsy who, during the specified time period, had not had a prescription filled for any antiseizure drug of interest. These limitations notwithstanding, the survey could, if successfully implemented, provide morbidity and cost data useful for administrative purposes, such as planning for public services. An added benefit of the survey could be data on distributions of antiseizure drugs prescribed.

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Monitoring Health in Los Angeles County

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The authors were members of a special committee of UCLA School of Public Health faculty members and Los Angeles County health department personnel formed in 1982 to reconcile health department programs with county health needs. The other UCLA members of the committee were: Lester Breslow, MD, MPH, Dean Emeritus and Professor of Health Services; Jonathan Fielding, MD, MPH, Professor of Health Services and Pediatrics; Ralph Frerichs, DVM, DrPH, Associate Professor of Epidemiology; William Shonick, PhD, Professor of Health Services; and Paul Torrens, MD, MPH, Professor of Public Health. Other Health Department personnel included Ellen Alkon, MD, Chief of Public Health, West Area; and Martin D. Finn, MD, Medical Director for Public Health Programs.

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Copies of the committee report, "An Approach to Monitoring the Health Status of Los Angeles County Residents," as well as tearsheets of this article, may be obtained from Dr. Janis.

Synopsis

The University of California at Los Angeles School of Public Health, in collaboration with the Los Angeles County Department of Health Services, compiled data and developed a standardized format that displayed a comparison of mortality and morbidity data between Los Angeles County, the State of California, and the United States in 1960, 1970, and 1980 for 16 health topic areas. Findings noted both favorable and unfavorable health trends, as well as substantial data collection problems.

In 1980, compared with the United States, the Los Angeles County rates for tuberculosis, gonorrhea, syphilis, and hepatitis B were as much as 45 to 128 percent higher, the homicide rate was more than double, and, for the population aged 65 years and over, the cirrhosis of the liver rate was

more than 56 percent higher. The myocardial infarction rate was 58 percent lower in the population aged 18 to 64. Problems of inadequate data for many health indicators, lack of comparability in data, and conflicting information from different data sources were noted.

"Would you tell me please, which way I ought to go from here?" (asked Alice).

"That depends a good deal on where you want to get to," (said the Cat).

Lewis Carroll, "Through the Looking Glass"

CLEARLY, SOUND DECISIONMAKING requires knowing where you want to get to before you can determine which way to go.

One of the most valuable studies published by the Public Health Service during the Carter administration was the report "Promoting Health/Preventing Disease: Objectives for the Nation" (1). That document not only outlined the nature of the health problems facing this country but also provided a conceptual scheme for addressing these problems by setting quantifiable national goals for improvements in specific health areas to be achieved by the year 1990. Those goals provided a framework for future health planning in this country and a way of monitoring progress toward the achievement of the goals. The question is, How have local and State health departments responded to the challenge these goals presented?

This paper describes one attempt to answer that question. It outlines an approach taken by the University of California at Los Angeles (UCLA) School of Public Health, working collaboratively with the Los Angeles County Department of Health Services, to address this issue. In particular, it describes the development and findings of a report that constitutes the first part of a three-phase project designed to provide the Los Angeles County Department of Health Services with a means of assessing the effectiveness of its program activities in improving the health status of the citizens of Los Angeles County.

The three phases of the project were conceptualized as follows: phase one (reported here) involved the collection of data in selected health areas identified as being potentially amenable to prevention activities or intervention measures; phase two called for an examination of the relationship between the health problems identified in phase one

These limitations with the data underscore the need to standardize data collection procedures and to extend the parameters on which information is collected. The approach represents a tool that could be used by many health departments to monitor their activities and set future goals.

and current health department activities and resource allocations; and phase three called for the establishment of quantifiable objectives for improvements on selected health outcome measures in Los Angeles County by 1990.

Background

In 1982, Robert White, Director of the Los Angeles County Department of Health Services, requested assistance from the UCLA School of Public Health in assessing the effectiveness of his department's activities. A committee that included faculty from the school of public health and high-level administrators from the county health department was established to devise a way of determining the effectiveness of the health department's current program activities in relation to the actual health problems of the people in the county.

"Process" versus "Outcome." The committee's first problem was whether to examine "process" or "outcome" measures in assessing the health department's activities. Looking at process measures would involve reviewing program activities, such as the number of immunizations provided, surveillance activities for communicable diseases, provision of prenatal and well-baby care, and so forth. Looking at outcome measures would involve collecting morbidity and mortality data on specific health status indicators, such as rates of infant mortality, infectious and chronic disease, accidents, and substance abuse.

In California, work was being done in setting model standards for community health services, and this could have been used as a basis for standard setting in Los Angeles County (2). However, the model standards approach focused primarily on process measures, and the committee members felt that it would be most helpful to collect data on outcome rather than process measures.

Several factors influenced this decision: first, process measures provide information only on existing health department activities, but they might

not reflect the success of the department's activities in addressing certain problems. For example, in Los Angeles County, the recent increase in the Southeast Asian population, as well as in other population groups, has been accompanied by a significant increase in tuberculosis. Measurement of a process variable such as "surveillance activity" would identify the effort mounted in this area, but it would not indicate whether the health problem was, in fact, being adequately addressed. Unless there was an outcome measure showing a low rate of tuberculosis (which would demonstrate effective health department activity in this area), it would be incorrect to state that the health department was fulfilling its mission of maintaining and promoting the health of the people of this county.

A second factor influencing the committee's decision to use outcome rather than process measures was a concern that the use of process variables would allow mainly for an assessment of existing health department programs dealing with health problems that may have been a more serious threat to people's health decades ago than today—for example, contaminated water, milk and dairy product-borne diseases, or rodent- and vector-related diseases—but would not allow for the identification of current health problems for which there were no programmatic activities.

Utilization of outcome measures would provide an opportunity to review a wide range of health problems that might exist in the community, including, but not limited to, those problems for which a department had programs. The use of health outcome measures to assess the activities of the Los Angeles County Department of Health Services is, of course, consistent with the approach outlined in "Promoting Health/Preventing Disease" (1).

Data collection. Initial identification of the specific health outcome measures to be considered for the data collection effort was done by reviewing the health topic areas identified in "Promoting Health/Preventing Disease" (1), "Model Standards of Community Preventive Health Services" (3), and the National Health Planning Goals (4), and by examining a list of the current programmatic activities of the Los Angeles County health department. (Table 1 lists the areas noted in these documents.)

The areas selected for data collection were those that were either included in two or more of these sources or were considered important by committee members. The actual selection of health areas was done by consensus among the members based on their perceptions of the importance of these areas.

'With respect to significant health problems, the report noted that heart disease, cancer, and accidents were the principal causes of death in Los Angeles County, as in the rest of the nation.'

The known availability or lack of availability of certain data also influenced the final choice of health areas selected for inclusion in the report.

Specific indicators for the 16 health areas selected for data collection are shown in the accompanying box. Data were also collected on race-ethnicity and age and on the demography of Los Angeles County in the time period involved, since changes in mortality or morbidity rates could possibly be related to demographic changes in the county.

The next task required selecting a way to evaluate the outcome indicators by comparing them with previous levels in the county and with State and national levels. The period from 1960 to 1980 was selected because it would allow for an analysis of data from 3 censal years and provided the opportunity to observe possible trends. The decision to use data from California and the United States as a basis for comparison with those from the county was made because these data were the most readily available. Although information from similar Standard Metropolitan Statistical Areas (SMSAs) would have provided a more logical basis for comparison with the Los Angeles County data, these data were not readily available in a format that could be used for this report.

At the policy-making level, the collaborative effort on the part of the UCLA School of Public Health and the Los Angeles County Department of Health Services was reflected in the composition of the committee that supervised the project. The actual data collection was done primarily by a UCLA School of Public Health doctoral student. The senior author took the major responsibility for the preparation of the report, with the advice and assistance of the chairman of the committee and the deputy director of the department of health services. The data were collected over a 9-month period during 1982. Staff from the Los Angeles County Department of Health Services provided much of the raw data used to calculate rates in a number of areas and also helped check the data that were collected.

Table 1. Health topic areas reviewed for Los Angeles County Health Monitoring Project

<i>Health topic areas</i>	<i>Objectives for the nation</i>	<i>Model standards</i>	<i>National health planning goals</i>	<i>Los Angeles County Department of Health Services programs</i>
High blood pressure control	X	X		
Family planning	X	X		
Pregnancy and infant health	X	X	X	X
Immunization	X	X	X	X
Sexually transmitted disease	X	X		X
Toxic agent control	X			X
Occupational health and safety	X	X	X	X
Accident prevention— <i>injury control</i>	X	X	X	
Dental health	X	X	X	X
Surveillance and control— infectious diseases	X	X	X	X
Smoking and health	X		X	
Misuse of drugs and alcohol	X		X	X
Nutrition	X	X	X	X
Physical fitness	X			
Control of stress and violent behavior	X			
Child health			X	X
Adolescent health			X	
Adult health			X	
Older adult health			X	X
Heart disease, cancer, and stroke			X	
Air quality	X			
Chronic disease control	X			X
Food protection	X			X
Genetic disease control	X			
Noise control	X			X
Sudden infant death syndrome				X
Water quality	X			X
Housing quality				X
Radiologic health				X
Vector control				X
Child abuse				X

NOTE: "X" indicates specific health topic areas chosen for data collection because of their inclusion in two or more sources or because of their committee-designated importance.

Table 2. Health Monitoring Project No. 1 format example: Homicide mortality rates per 100,000 population by age and by race: Los Angeles County, California, and the United States; 1960, 1970, and 1980

<i>Age, and Race</i>	<i>Los Angeles County</i>			<i>California</i>			<i>United States</i>		
	<i>1960</i>	<i>1970</i>	<i>1980</i>	<i>1960</i>	<i>1970</i>	<i>1980</i>	<i>1960</i>	<i>1970</i>	<i>1980</i>
All ages	5.2	10.0	23.7	4.5	7.0	14.7	4.7	8.3	11.3
Whites	3.6	6.6	17.3	3.3	3.7	NA	2.5	4.4	NA
Nonwhites	19.3	32.2	51.2	18.3	34.2	NA	21.8	35.5	NA
Under 20 years	2.8	2.7	8.3	2.3	3.1	7.4	1.5	3.0	8.6
Whites	2.2	1.8	6.5	1.5	2.3	NA	1.0	1.5	NA
Nonwhites	8.1	7.4	15.0	5.9	9.1	NA	4.7	11.2	NA
20–64	7.0	14.6	32.4	6.6	10.0	19.9	7.4	12.8	14.9
Whites	4.7	9.1	23.0	4.7	4.5	NA	3.7	6.5	NA
Nonwhites	28.4	51.6	73.6	28.9	57.1	NA	39.3	61.5	NA
65 years or over	3.4	6.7	10.8	2.7	4.8	8.0	2.7	4.6	5.5
Whites	3.2	6.3	10.6	2.6	4.4	NA	2.1	3.4	NA
Nonwhites	7.5	9.9	11.9	5.3	9.3	NA	10.0	17.3	NA

NOTE: NA = not currently available.

Overview of the Report

The report, "An Approach to Monitoring the Health Status of Los Angeles County Residents," was submitted to the Los Angeles County Department of Health Services in 1983. It reviewed population changes in Los Angeles County for the years 1960, 1970, and 1980 by race-ethnicity and age; presented indicators (mortality and morbidity rates) by race-ethnicity and age for 8 of the 16 subject areas selected by the committee for study, for Los Angeles County, for California, and for the United States in 1960, 1970, and 1980; discussed data collection procedures and problems; and noted pertinent issues involving the 8 health areas where adequate data were not available to use as indicators.

It was possible to obtain adequate data in only 8 of the 16 major subject areas: (a) infant and maternal health, (b) family planning, (c) infectious disease, (d) accidents, (e) violent behavior, (f) substance abuse, (g) health in children and adolescents, and (h) chronic disease. For the remaining 8 health subject areas (occupational health, hazardous sub-

stance control, dental health, nutrition, mental health, food safety and water quality, housing and environment, and prevalence of exercise) information was not available to construct tables that would present standardized data over time or allow comparisons between Los Angeles County and California or the United States.

Tables 2 and 3 are examples of the format used for the presentation of most of the data. In this format, the health indicators were presented by age and race for Los Angeles County, California, and the United States for 1960, 1970, and 1980.

Findings

The findings of the report were of two kinds: (a) those identifying significant health problems or favorable rates in the health status of Los Angeles County residents and (b) those indicating problems in collecting data for study.

With respect to significant health problems, the report noted that heart disease, cancer, and accidents were the principal causes of death in Los

Health-related areas selected for study in Los Angeles County Health Monitoring Project

Infant and maternal health

- Infant, neonatal, and perinatal mortality rates
- Percent of births weighing 2,500 grams or less
- Rate and percent of infant deaths due to congenital malformations
- Maternal mortality rates

Family planning

- Birth rates among teenagers
- Abortion-related measures (California and the U.S.)

Infectious diseases

- Incidence rates for vaccine-preventable disease, i.e., measles, mumps, rubella, polio, diphtheria, pertussis, and tetanus
- Incidence rates for tuberculosis
- Incidence rates for venereal diseases, i.e., gonorrhea, syphilis
- Incidence rates for hepatitis B

Accidents

- Mortality rates due to all accidents, motor vehicle accidents, falls, poisoning, drowning, firearms, and fire and explosions
- Rates of persons killed or injured in motor vehicle accidents

Violent behavior

- Mortality rates due to homicides and suicides
- Referrals for child abuse cases to the Department of Public Social Services

Substance abuse

- Mortality due to cirrhosis of the liver
- Measures pertaining to persons killed or injured in alcohol-involved motor vehicle accidents
- Frequency of drug-related arrests, deaths, and emergency room visits

Health in children and young adults

- Mortality rates in children

Chronic disease

- Cancer mortality rates for all cancers, and for respiratory, breast, cervical, prostate cancer
- Cancer incidence rates by site
- Cardiovascular disease mortality rates for all major cardiovascular diseases, diseases of the heart, myocardial infarction, and cerebrovascular diseases

Occupational health

- Rates of fatalities and injuries by broad occupational groupings

Hazardous substance control

Dental health

Nutrition

Mental health

Food safety and water quality

Housing and environment

Prevalence of exercise

Table 3. Health Monitoring Project No. 2 format example: Homicide mortality rates per 100,000 population by age and by race, with percent changes in rates: Los Angeles County, 1960, 1970, and 1980

Age and race	Los Angeles County						Percent change in rates	
	1960		1970		1980		1960-70	1970-80
	Number	Rate	Number	Rate	Number	Rate		
All ages	311	5.2	706	10.0	1,733	23.7	+92.3	+137.0
Whites	198	3.6	395	6.6	1,036	17.3	+83.3	+162.1
Nonwhites	113	19.3	311	32.2	731	51.2	+66.8	+59.0
Blacks	110	23.9	309	40.5	692	73.3	+69.4	+81.0
Asian			2	1.1	37	8.5	...	+672.7
Indians	3	2.4	0	0.0	2	4.2	...	...
18 years or less	60	2.8	62	2.7	1169	8.3	-3.6	+207.4
Whites	41	2.2	34	1.8	101	6.5	-18.2	+261.1
Nonwhites	19	8.1	28	7.4	67	15.0	-8.6	+102.7
Blacks	19	10.0	27	8.6	65	20.8	-14.0	+141.9
Asians			1	1.8	2	1.7	...	-5.6
Indians	0	0.0	0	0.0	0	0.0	...	...
18-64 years	233	7.0	601	14.6	1,523	32.4	+108.6	+121.9
Whites	141	4.7	323	9.1	865	23.0	+93.6	+152.7
Nonwhites	92	28.4	278	51.6	653	73.6	+81.7	+42.6
Blacks	89	35.5	277	67.2	620	109.0	+89.3	+62.2
Asians			1	0.9	31	10.8	...	+1,100.0
Indians	3	4.1	0	0.0	2	6.5	...	...
65 years or over	19	3.4	43	6.7	80	10.8	+97.0	+61.2
Whites	17	3.2	38	6.3	69	10.6	+96.9	+68.2
Nonwhites	2	7.5	5	9.9	11	11.9	+32.0	+20.2
Blacks	2	10.1	5	13.1	7	11.2	+29.7	-14.5
Asians			0	0.0	4	14.6	...	...
Indians	0	0.0	0	0.0	0	0.0	...	...

¹ For 1980, the sums of the deaths in the White and Nonwhite categories are slightly less than the totals noted due to the exclusion of a category classified as "other" or "unknown".

Angeles County, as in the rest of the nation. However, unlike the nation, the Los Angeles County rates for tuberculosis, gonorrhea, syphilis, and hepatitis B in 1980 were 45 percent to 128 percent higher; the homicide rate in Los Angeles County in 1980 was more than double the rate for the United States, and it had quadrupled from 1960 to 1980; and the cirrhosis of the liver rate was more than 56 percent higher for the population aged 65 and older. There were also large differences in the health status of different age and racial groups: Asians had the most favorable health status profile, with lower rates for infant mortality, accidents, homicides, suicides, cirrhosis of the liver, cancer, and major cardiovascular disease than whites, blacks, or Indians.

Lower rates for infant mortality, accidents, cancer, and acute myocardial infarction (MI) than in the United States were observed in Los Angeles County. The difference in MI rates, in particular, was dramatic, with a 75 percent drop from 1960 to

1980 for the 18- to 64-year-old age group. In 1980, the mortality rate for MI was 58 percent lower in Los Angeles County than in the United States for this age group.

While these findings are of interest to both health professionals and the general public, equally important were the findings indicating problems in data collection. These problems were (a) an inadequate data base, (b) inconsistent data reporting procedures, (c) differences between data based in definitions of race-ethnicity, (d) conflicting information from different sources, and (e) lack of discrete data by age, sex, and race. The following are a few examples of these problems:

Inadequate data base. Adequate data to develop indicators were not available for 8 of the 16 health areas selected for analysis. Even for those areas where some data were available, additional information is needed to provide a more comprehensive understanding of the problem. For example, no in-

formation was available for percentage of births with fetal alcohol syndrome or percentage of births with Rh disease. Further, there were no data on the causes of fetal and neonatal death, on the percentage of babies with birth weights less than 1,500 grams, or on morbidity related to prenatal complications and complications of labor and delivery.

Most areas with minimal or no data available are areas of relatively recent concern to public health, for example, occupational health, hazardous substance control, nutrition, and prevalence of those who exercise. For areas such as mental health, dental health, and housing and the environment, data were available at the national and State levels but could not be obtained for the county. Further, in the case of mental health, substance abuse, and violent behavior (including child abuse, rape, and family violence) the available county data reflected the availability of services and not necessarily the magnitude of the problem.

Lack of adequate data was certainly not surprising to those of us working in this area. What was useful about this study, however, was that it highlighted these deficiencies in data for a broader audience in the Los Angeles community. The study was a first-page headline story in one of the major Los Angeles newspapers and a lead story in the metropolitan section of the other paper. It also received extensive local radio and television coverage when it was released. As a result of this report's finding about inadequate data, subsequent efforts have been made by the health department to collect data on some of these neglected areas (5).

Inconsistent data-reporting procedures. It was difficult to obtain data to construct comparable rates for Los Angeles County and the United States by race-ethnicity for 1960, 1970, and 1980. Published reports did not consistently present information in the same age and race groupings over the 20-year period. The calculation of 1980 rates presented special problems since, at the time the report was being compiled, the only available age groupings by race-ethnicity from the 1980 Census were under 5 years, 5 to 17, 18 to 64, and 65 years and over. This prevented calculation of more detailed rates by age, and it was difficult to match vital statistics to these age groups. These problems would have been diminished if the rates were constructed in 1984, since more detailed census counts are now available.

Differences in definitions of race-ethnicity. It was difficult to match definitions of race-ethnicity be-

'There were also large differences in the health status of different age and racial groups: Asians had the most favorable health status profile, with lower rates for infant mortality, accidents, homicides, suicides, cirrhosis of the liver, cancer, and major cardiovascular diseases than whites, blacks, or Indians.'

tween the numerator and denominator with the data available to construct rates for the different health measures. This problem was especially apparent with Hispanics, who were identified according to surname in the vital statistics data but were self-identified in census counts.

Conflicting information on the same topic from data provided through different sources. This was especially apparent in the "Infectious Disease" section and the "Food and Water Quality" section where State and local data differed.

Lack of discrete data by age, sex, and race. This was a problem in data collection for almost every health measure examined. The lack of discrete data on age was particularly serious, and it forced the data collected to be reported, as noted earlier, in only three large age groupings: under 20 (or under 18 years), 20 to 64 years, and 65 years and over.

Discussion

The report represents the sort of contribution a school of public health can make to a community, although it would, of course, be possible for other agencies to conduct such a study. This report presented in a single document a wide array of existing data accumulated from multiple sources. It identified the specific sources and ICD codes for the health indicators noted. It presented data in a standardized format that allowed for a comparison with the State of California and the United States over time. The value of the information provided was not primarily in developing new indicators but in organizing existing information in a useful way. The approach used in the preparation of this report represents a tool that could prove valuable to health departments throughout the country.

Identification of significant health problems, and determination of those measures in which the Los Angeles County residents showed a generally better health status than residents of California or the United States, clearly helped the county understand the scope and nature of its residents' health problems. The collection effort was also valuable because it identified specific areas where data were inadequate or lacking; cited the lack of comparability in the demographic, morbidity, and mortality data; and pointed out conflicting information on the same topic provided by different sources. These problems in data collection underscore the need to standardize the collection and presentation of health data and to extend the parameters on which information is collected. Our findings also support the recommendations made by Green and coworkers (6) and those of a recent seminar sponsored by the Centers for Disease Control which noted "the need to develop improved surveillance methods and uniform data definitions as an essential step in implementing the 1990 'Prevention Objectives' " (7).

As noted, this report was prepared as a collaborative effort between the UCLA School of Public Health and the Los Angeles County Department of Health Services. A reflection of this collaboration can be seen in a document prepared during this same time frame and published in July 1984, entitled "Health in Los Angeles County: A Report on Selected Health Indicators, 1984" (5). The authors of this document selected essentially the same health indicators for study as those used in the health monitoring project, provided data to present comparisons of morbidity and mortality with four other large U.S. metropolitan areas for the years 1970 and 1980 (with 1981 and 1982 data included when available), reviewed the health departments' programs and activities related to these health indicators, and set objectives for 1985 and 1990 for the Los Angeles community and the health department to meet these objectives. Management and program heads are presently preparing action plans and strategies to achieve these health department objectives, and the department plans to issue a followup report in 1 year to assess the progress made toward these objectives.

Conclusion

The aphorism "knowledge is power" holds true not only for those privy to high-level bureaucratic secrets, but for all who share responsibility for policy making. Indeed, in some circumstances *lack* of knowledge about certain key health measures can be as serious as any identified health problems.

It is a political fact of life that responsibility for the administration of most health programs has shifted from the Federal to the State and local levels. This shift has been accompanied by few, if any, data reporting requirements from the Federal Government. Although this move has, unfortunately, been greeted by some local and State health professionals as a relief from excessive paperwork, the long-term effect of a lack of standardized data at the State and local level poses serious problems for all concerned with effective decisionmaking about public health. Making a case for future resources can only be effective based on data that can demonstrate conclusively to local and State decisionmakers the nature of the health problems currently existing in the community. To emphasize the need for proper data availability in the coming years at the State and local level, it would be particularly beneficial to hold a national conference to consider how this could best be done.

The intended audience for the report described was the Los Angeles County Department of Health Services. In these times of reduced resources, however, such knowledge can also be useful for elected officials, community leaders, and all others responsible for decisionmaking affecting the health of the people of a county. The value of the data collection effort is perhaps best expressed in a recent comment by Lester Breslow (8), Dean Emeritus and now Professor of Public Health at the UCLA School of Public Health:

Public Health leaders in the past . . . used the data of their times . . . to capture attention and arouse action on the major health problems of the day. We must do the same. One challenge of the '80s . . . is to delineate fully and carefully what the health problems are, not just for the experts but for all who should know.

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Teaching Medical Students Epidemiology: Utilizing a State Health Department

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Synopsis

An epidemiology teaching course for third-year medical students was developed at the University of Vermont's College of Medicine by staff members of the Vermont Department of Health in conjunction with clinical faculty members. The course consists of analyses of actual community health problems encountered by the health department, evaluation

of published clinical studies, and design of studies on current public health issues in Vermont.

In the course's first year, 54 percent of the students gave it an overall assessment of average or above average. A striking improvement was found in the second year; 98 percent of the students rated their overall assessment as average or better. Sessions rated the best by students were the critical appraisal of clinical studies, followed by sessions on study design and outbreak investigations.

The Vermont course communicates epidemiologic concepts to students by stressing their clinical relevance and by putting the concepts into a recognizable public health context. Students are required to grapple with epidemiologic issues as participants.

This approach to teaching epidemiology combines faculty having both public health and clinical perspectives, emphasizes relevance to future practice, and requires students to actively work through epidemiologic problems. The Vermont experience has shown that combining health department and clinical faculty resources can result in a useful format for teaching epidemiology to medical students.

THE VERMONT DEPARTMENT OF HEALTH and the clinical faculty of the University of Vermont's College of Medicine jointly developed a program to teach epidemiology to medical students at the university. This course is required for the approximately 90 third-year medical students. It has been offered since 1982 and is available in 1985.

The course's basic elements consist of analyzing the epidemiologic evidence outbreaks of disease, demonstrating the usefulness of epidemiology in clinical practice, and developing study designs to test hypotheses about specific public health issues in Vermont.

Health department staff members developed the student exercises for investigating actual health problems. Students also appraise evidence from nationally published studies for clinical management of patients. These problems are used to develop skills in defining disease distribution, designing and interpreting scientific studies, and appraising evidence of epidemiologic investigations.

The objectives and content of the epidemiology course resulted from a committee that worked for more than 1 year with representatives from both the department of health and the College of Medicine. The implementation of the teaching program and